

Application Serial No. 10/541,815  
Amendment filed June 16, 2011  
Replied to Office Action mailed February 16, 2011

**REMARKS**

Claims 1-14 and 23-27 are pending in this application. Claim 27 is amended herein. Further reconsideration is requested based on the foregoing amendment and the following remarks.

**Response to Arguments:**

The Applicants appreciate the consideration given to their arguments. The Applicants, however, are disappointed that their arguments were not found to be persuasive. The Office Action asserts in section 14, at page 21, that:

In response, the examiner notes that the word coupling is not ignored, but rather is insignificant to the issue at hand and does not distinguish the phrase "ohmically coupled" from the prior art, nor enables the device.

This is submitted to be incorrect. According to the provisions of MPEP 2143.03, all claim limitations must be considered. As provided therein:

"All words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Thus, for the Office Action to treat the recitation "ohmic coupling" as insignificant in order to focus on the word "ohmic" is error.

The Office Action goes on to assert in section 14, at page 21, that:

The word "contact" is not limited to physical contact, and can include a variety types of contact. In this case, electrical contact.

It is submitted that a person of skill in the art would understand the word "contact", especially electrical contact, to mean physical contact.

The Office Action goes on to assert in section 14, at page 21, that:

Furthermore, the Applicant's examples that coupling can include capacitive or inductive coupling is not relevant to the issue since neither capacitive or inductive coupling are ohmic in any way.

Even so, capacitive or inductive coupling are still examples of coupling, as opposed to "contact."

The Office Action asserts further in section 14, at page 21, continuing at page 22, that:

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However, this entire line of argument and the Applicant's entire line of reasoning is totally irrelevant to the fact that the Applicant's specification simply does not provide any enablement whatsoever for the electrolyte and organo-resistive material to be "ohmically coupled".

This is submitted to be incorrect, as discussed more fully below.

The Office Action goes on to assert at page 3, that:

Nothing about "ohmic contact" implies or requires physical contact. Instead, the definition is provided in support of the fact that ohmic requires that Ohm's law be met (i.e. that resistance is constant regardless of applied voltage).

To the contrary, the very use of the word "interface" in the definition of "ohmic contact" provided with the Office Action indicates that there is physical contact. Resistance, moreover, is merely described as being very low, and independent of implied voltage, in the definition of "ohmic contact" provided with the Office Action. Nowhere does the definition of "ohmic contact" indicate that Ohm's law *must* be met, contrary to the assertion in the Office Action.

The Office Action goes on to assert in section 14, at page 23, that:

As the Office action points out the self-assembled monolayer (SAM) is the organo-resistive material.

Even if this were true, however, it would still not amount to an "organo-resistive material embedded in the electrolyte to form the memory unit," as recited in, for example, claim 1.

The Office Action goes on to assert in section 14, at page 23, that:

The self-assembled monolayer (which is the organo-resistive material) is on an electrode 2000 Angstroms high, with a PDMS well enclosing the SAM covered electrode and embedded in the electrolyte (see Section Band Electrodes on Page 4032, for example or Lines 1-9 of Right Col., on Page 4032).

This is submitted to be incorrect. The section entitled "Band Electrodes" in the left column at Page 4032 of Roth-Langmuir, to the contrary, describes an electrochemical cell defined by placing a patterned 2 mm thick sheet of polymerized PDMS it to frame a ~10 mm square area encompassing both the working and counter electrodes. Consequently, the PDMS defines the area of electrode that will be exposed to an electrolyte solution, rather than an "organo-resistive material embedded in the electrolyte to form the memory unit," as recited in, for example, claim 1.

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Lines 1-9 of the right column of page 4032, for their part, discuss "Fluorescence Imaging," rather than an "organic-resistive material embedded in the electrolyte to form the memory unit," as recited in, for example, claim 1.

The Office Action goes on to assert in section 16, at page 24, that:

The examiner notes that the Applicant's citation of Page 2360, Left Col., Lines 7-11 of Section II, Experiment is not relevant to the rejection.

To the contrary, according to MPEP 2131:

The elements must be arranged as required by the claim, but this is not an *ipissimis verbis test*, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

Claim 1, for example, is directed to a memory unit. Since the citation of Roth-J. Vac at page 2360, in the left column, in lines 7-11 of Section II, "Experiment", tends to show that the elements Roth-J. Vac are not arranged as required by the claim, the citation is clearly relevant to the rejection.

The Office Action goes on to assert in section 17, at page 16, that:

This is not persuasive. The Applicant's position relies upon a different use for the claimed device than the prior art intends to use the device for. In response the Examiner notes that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. See, e.g., *In re Pearson*, 181 USPQ 641 (CCPA); *In re Minks*, 169 USPQ 120 (Bd Appeals); *In re Casey*, 152 USPQ 235 (CCPA 1967); *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

This is submitted to be incorrect. Claim 1, for example, is directed to a memory unit having a storage function. Sakurai, on the other hand, is directed to a solar cell. The difference between a solar cell and a memory unit is submitted to be a structural difference. As provided in MPEP 2131:

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Since Sakurai shows no memory unit, claim 1, for example, is not anticipated by Sakurai. *Verdegaal Bros.*

The Office Action goes on to assert in section 18, at page 27, that:

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This is not persuasive. The Applicant's position relies upon a different use for the claimed device than the prior art intends to use the device for. In response the Examiner notes that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. See, e.g., *In re Pearson*, 181 USPQ 641 (CCPA); *In re Minks*, 169 USPQ 120 (Bd Appeals); *In re Casey*, 152 USPQ 235 (CCPA 1967); *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). See MPEP § 2114.

This is submitted to be incorrect. Claim 1, for example, is directed to a memory unit having a storage function. Misra, on the other hand, is fabricating crossbar array microelectronic electrochemical cells. The difference between a microelectronic electrochemical cell and a memory unit is submitted to be a structural difference. As provided in MPEP 2143.03:

To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Since Misra shows no memory unit, claim 1, for example, is patentable over Sakurai. *In re Royka*. Further reconsideration is thus requested.

#### **Objection to the Claims:**

Claim 27 was objected to for an informality. Claim 27 was amended in substantial accord with the Examiner's suggestion. The Examiner's suggestion is appreciated. Withdrawal of the objection is earnestly solicited.

#### **Claim Rejections - 35 U.S.C. § 112:**

Claims 7, 23 and 25 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

The Office Action asserts in section 4, at page 3, that:

In regards to claim 7, the closest support for the "ohmically coupling" steps set forth is found in Fig. 2 of the drawings. However, this drawing is merely a schematic of the circuit and does not set forth that the elements are connected by "ohmically coupling". In regards to claims 23 and 25, there is simply no teaching anywhere in the specification that the electrolyte is "ohmically coupled" to anything. In fact, none of the words "ohmically", "coupled" and "coupling" even appear anywhere in the entire disclosure.

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To the contrary, under the provisions of MPEP 2163.02, "the subject matter of the claim need not be described literally (i.e., using the same terms or in haec verba) in order for the disclosure to satisfy the description requirement." Rather, as provided therein:

Whenever the issue arises, the fundamental factual inquiry is whether the specification conveys with reasonable clarity to those skilled in the art that, as of the filing date sought, applicant was in possession of the invention as now claimed. See, e.g., *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991). An applicant shows possession of the claimed invention by describing the claimed invention with all of its limitations using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the claimed invention. *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997).

Here, the Applicant shows possession in Fig. 1, where those of skill in the art would understand that, since the organo-resistive material 2 is next to the conductive material 3, but the organo-resistive material 2 does not contact the conductive material 3 directly, the organic-resistive material is coupled to the electrically conductive material 2. Since, moreover, the organo-resistive material 2 and the conductive material 3 are embedded in an electrolyte layer 4, as described at paragraph [0017]; the organo-resistive material 2 is coupled ohmically to the conductive material 3.

Claims 7, 23 and 25 are submitted to comply with the written description requirement within the meaning of 35 U.S.C. § 112, first paragraph. Withdrawal of the rejection of claims 7, 23 and 25 is earnestly solicited.

Enablement:

Claims 23 and 25 were rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which is not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The rejection is traversed.

Ohms law describes resistance. Electrically direct connected parts are "ohmically coupled," whether resistance is linear or not. No representation is made that referring to an electrical connection as "ohmically coupled" implies adherence to Ohms law, contrary to the implication in the Office Action.

The Office Action asserts in section 5, at pages 3 and 4, that:

The claim recites "an organo-resistive material ohmically coupled to the electrolyte", which is not enabled by the specification. In fact, the specification

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teaches that the electrolyte is not ohmically coupled to the organo-resistive material since this device does not follow Ohm's law ( $V=IR$ ). See, for example, Ruzyllo (Semiconductor Glossary, entry for "ohmic contact"; supplied with Office action dated 10 June 2009) which teaches that an ohmic coupling has resistance that is independent of applied voltage (as set forth in Ohm's law). Rather, the specification clearly teaches that "the resistance (and with it the conductivity) is in this case.

This is submitted to be incorrect. The definition of "Ohmic contact" of Ruzyllo provided with the Office Action is a definition of Ohmic *contact*, not Ohmic coupling. Although coupling can include contact, contact is not coupling.

"Contact", rather, implies a physical contact. Coupling, on the other hand, can include capacitive or inductive coupling, as in a condenser or a transformer, in which there is no *physical* contact. Field effect, for example, is not a contact. Accordingly, "contact" is narrower than "coupling" because two components can be "capacitively coupled" but never "capacitively contacted". Accordingly, the definition of Ohmic *contact* provided with the Office Action is not relevant to the claimed invention.

Nor does the definition of ohmic contact in Ruzyllo teach that an ohmic coupling has resistance that is independent of applied voltage, contrary to the assertion in the Office Action. The definition in Ruzyllo, rather, applies to Ohmic *contact*, not Ohmic coupling, as discussed above.

Whether or not the organo-resistive material follows Ohms law or not is not relevant to whether the organo-resistive material is ohmically coupled to the electrolyte or not.

There is nothing contradictory about ohmic coupling and the resistance of an organo-resistive material varying in accordance with an applied voltage. Ohms law, in particular, describes resistance, not coupling. Electrically direct connected parts can be "ohmically coupled," whether resistance is linear or not. No representation is made that referring to an electrical connection as "ohmically coupled" implies adherence to Ohms law, contrary to the implication in the Office Action.

Resistance, moreover, can be independent of applied voltage even according to Ohm's law, contrary to the assertion in the Office Action. Under Ohm's law, rather, voltage is proportional to current, and the constant of proportionality is resistance.

Claims 23 and 25 are submitted to be definite within the meaning of 35 U.S.C. § 112, first paragraph. Withdrawal of the rejection of claims 23 and 25 is earnestly solicited.

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Definiteness:

Claims 23 and 25 were rejected under 35 U.S.C. § 112, second paragraph, as indefinite.  
The rejection is traversed.

The Office Action asserts in section 7, at pages 4 and 5, that:

The claim recites "an organo-resistive material ohmically coupled to the electrolyte", which is not enabled by the specification. In fact, the specification teaches that the electrolyte is not ohmically coupled to the organo-resistive material since this device does not follow Ohm's law ( $V=IR$ ). See, for example, Ruzyllo (Semiconductor Glossary, entry for "ohmic contact"; supplied with Office action dated 10 June 2009) which teaches that an ohmic coupling has resistance that is independent of applied voltage (as set forth in Ohm's law). Rather, the specification clearly teaches that "the resistance (and with it the conductivity) is in this case and more specifically teaches "applying an electrical voltage between 2 and 3 initiates an ionic current through 4, whereby organo-resistive material 2 is either oxidized or reduced and is thus rendered conductive or non-conductive" (Page 5, Lines 8-11). The specification specifically teaches that the organo-resistive material is not ohmically coupled to the electrolyte but rather the resistance (conductivity) changes as a result of the voltage applied. As such, the recitation of "an organo-resistive material ohmically coupled to the electrolyte" renders the claim indefinite because it is unclear how the organo-resistive material can be ohmically coupled to the electrolyte..

This is submitted to be incorrect. The definition of "Ohmic contact" of Ruzyllo provided with the Office Action is a definition of Ohmic *contact*, not Ohmic coupling. Although coupling can include contact, contact is not coupling.

"Contact", rather, implies a physical contact. Coupling, on the other hand, can include capacitive or inductive coupling, as in a condenser or a transformer, in which there is no *physical* contact. Field effect, for example, is not a contact. Accordingly, "contact" is narrower than "coupling" because two components can be "capacitively coupled" but never "capacitively contacted". Accordingly, the definition of Ohmic *contact* provided with the Office Action is not relevant to the claimed invention.

Nor does the definition of ohmic contact in Ruzyllo teach that an ohmic coupling has resistance that is independent of applied voltage, contrary to the assertion in the Office Action. The definition in Ruzyllo, rather, applies to Ohmic *contact*, not Ohmic coupling, as discussed above.

Whether or not the organo-resistive material follows Ohms law or not is not relevant to whether the organo-resistive material is ohmically coupled to the electrolyte or not.

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There is nothing contradictory about ohmic coupling and the resistance of an organo-resistive material varying in accordance with an applied voltage. Ohms law, in particular, describes resistance, not coupling. Electrically direct connected parts can be "ohmically coupled," whether resistance is linear or not. No representation is made that referring to an electrical connection as "ohmically coupled" implies adherence to Ohms law, contrary to the implication in the Office Action.

Resistance, moreover, can be independent of applied voltage even according to Ohm's law, contrary to the assertion in the Office Action. Under Ohm's law, rather, voltage is proportional to current, and the constant of proportionality is resistance.

Claims 23 and 25 are submitted to be definite within the meaning of 35 U.S.C. § 112, second paragraph. Withdrawal of the rejection of claims 23 and 25 is earnestly solicited.

#### **Claim Rejections - 35 U.S.C. § 102:**

Claims 1-4, 6, 7, 9, 12, 13, 25, 26, and 27 were rejected under 35 U.S.C. § 102(b) as anticipated by Roth, "Characterization of Charge Storage in Redox-Active Self Assembled Monolayers," Langmuir 2002, 18, 4030-4040 ((hereinafter "Roth-Langmuir"). The rejection is traversed. Reconsideration is earnestly solicited.

Claim 1 recites:

An organo-resistive material embedded in the electrolyte to form the memory unit.

Roth-Langmuir neither teaches, discloses, nor suggests "an organo-resistive material embedded in the electrolyte to form the memory unit," as recited in claim 1. Roth-Langmuir, rather, describes a self-assembled *monolayer* formed on the surface of an *electrode*, which is then exposed to an electrolyte solution, not "an organo-resistive material embedded in the electrolyte," contrary to the assertion in the Office Action. In particular, as described at page 4032, in the left column, lines 3-7:

The SAMs were formed by placing the electrode in a 2 mg/mL solution of C<sub>12</sub>F<sub>c</sub>, PM1, or PM3 for 20 min and sonicating for an additional 1 min.

Roth-Langmuir, moreover, exposes the *electrode* to the electrolyte solution, not an organo-resistive material. In particular, as also described at page 4032, in the left column, lines 32-35:

PDMS adheres well to glass surfaces and prevents leakage of solution, thereby defining the area of electrode that will be exposed to electrolyte solution.

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Since Roth-Langmuir places an electrode in a solution including an organo-resistive material to form a self-assembled *monolayer* on the surface of the electrode, and then exposes the *electrode* to an electrolyte solution, Roth-Langmuir has no "organo-resistive material embedded in the electrolyte to form the memory unit," as recited in claim 1. Claim 1 is submitted to be allowable. Withdrawal of the rejection of claim 1 is earnestly solicited.

Claims 2-4, 6, 7, 9, 12, and 13 depend from claim 1 and add further distinguishing elements. Claims 2-4, 6, 7, 9, 12, and 13 are thus also submitted to be allowable. Withdrawal of the rejection of claims 2-4, 6, 7, 9, 12, and 13 is also earnestly solicited.

**Claims 25 and 26:**

The third clause of claim 25 recites:

An organo-resistive material ohmically coupled to the electrolyte to form the memory unit.

Roth-Langmuir neither teaches, discloses, nor suggests "an organo-resistive material ohmically coupled to the electrolyte to form the memory unit," as discussed above with respect to the rejection of claim 1. Claim 25 is the submitted to be allowable, for at least those reasons discussed above with respect to the rejection of claim 1. Withdrawal of the rejection of claim 25 is earnestly solicited.

Claim 26 depends from claim 25 and adds further distinguishing elements. Claim 26 is thus also submitted to be allowable. Withdrawal of the rejection of claim 26 is earnestly solicited.

**Claim 27:**

The first three clauses of claim 27 recite:

A memory,  
The memory having an electrolyte;  
An organo-resistive material embedded in the electrolyte.

Roth-Langmuir neither teaches, discloses, nor suggests "a memory," "the memory having an electrolyte," and "an organo-resistive material embedded in the electrolyte," as discussed above with respect to the rejection of claim 1. The Office Action asserts in section 9(a), that:

Regarding claim 27, the usage of the word "memory" does not distinguish the claims from the prior art because the claim establishes that the memory has an electrolyte, an organo-resistive material embedded in the electrolyte, and a conductor embedded in the electrolyte. Since these elements are taught by Roth as shown above, the memory is present.

This is submitted to be incorrect. Roth-Langmuir describes a self assembled monolayer, not a memory. Since claim 27 recites "memory", and Ross-Langmuir does not describe a memory, Roth-Langmuir does not anticipate claim 27.

Claim 27 is the submitted to be allowable, for at least those reasons discussed above with respect to the rejection of claim 1. Withdrawal of the rejection of claim 27 is earnestly solicited.

Roth-J. Vac.:

Claims 1-4, 6, 7, 9, 12, 13, 25, 26, and 27 were rejected under 35 U.S.C. § 102(b) as anticipated by Roth et al. "Molecular Approach toward Information Storage Based on the Redox Properties of Porphyrins in Self-Assembled Monolayers," J. Vac. Sci. Technol. Pp2359-2364 (hereinafter "Roth-J. Vac."). The rejection is traversed. Reconsideration is earnestly solicited.

Roth-J. Vac. neither teaches, discloses, nor suggests "an organo-resistive material embedded in the electrolyte to form the memory unit," as recited in claim 1. Roth-J. Vac., rather, immerses the microelectrode in the electrolyte to *form* the self-assembled monolayers. In particular, as described at page 2360, in the left column, in lines 7-11 of Section II, "Experiment":

The self-assembled monolayers (SAMs) of the porphyrins were formed by immersing the microelectrode in a 2 mg/milliliter solution of porphyrins for 20 min and sonic hating for an additional 1 min.

Since Roth-J. Vac. immerses the microelectrode in the electrolyte to form the self-assembled polymers, Roth-J. Vac. shows no "organo-resistive material embedded in the electrolyte to form the memory unit," as recited in claim 1.

Roth-J. Vac., in fact, *removes* the microelectrode from the electrolyte. In particular, In particular, as described at page 2360, in the left column, in lines 11 and 12 of Section II, "Experiment":

The microelectrode was removed and rinsed with distilled CH<sub>2</sub>Cl<sub>2</sub>.

Since Roth-J. Vac. removes the microelectrode from the electrolyte, Roth-J. Vac. shows no "organo-resistive material embedded in the electrolyte to form the memory unit," as recited in claim 1.

Roth-J. Vac., finally, leaves only a thin *film* of electrolyte on the electrode. In particular, as described in the right column at page 2360, in the label of Fig. 2:

Cyclic staircase voltammetry (100 V s<sup>-1</sup>) of the PM0 SAM on a 25 µm diam Au

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electrode in a film of an electrolyte solution containing 0.10 M Bu<sub>4</sub>NPF<sub>6</sub> in dried, distilled CH<sub>2</sub>Cl<sub>2</sub> using a Ag wire counter electrode.

Since Roth-J. Vac. leaves only a thin film of electrolyte on the electrode, Roth-J. Vac. shows no "organo-resistive material embedded in the electrolyte to form the memory unit," as recited in claim 1. Claim 1 is submitted to be allowable. Withdrawal of the rejection of claim 1 is earnestly solicited.

Claims 2-4, 6, 7, 9, 12, and 13 depend from claim 1 and add further distinguishing elements. Claims 2-4, 6, 7, 9, 12, and 13 are thus also submitted to be allowable. Withdrawal of the rejection of claims 2-4, 6, 7, 9, 12, and 13 is also earnestly solicited.

**Claims 25 and 26:**

Roth-J. Vac. neither teaches, discloses, nor suggests "an organo-resistive material ohmically coupled to the electrolyte to form the memory unit," as discussed above with respect to the rejection of claim 1. Claim 25 is the submitted to be allowable, for at least those reasons discussed above with respect to the rejection of claim 1. Withdrawal of the rejection of claim 25 is earnestly solicited.

Claim 26 depends from claim 25 and adds further distinguishing elements. Claim 26 is thus also submitted to be allowable. Withdrawal of the rejection of claim 26 is earnestly solicited.

**Claim 27:**

Roth-J. Vac. neither teaches, discloses, nor suggests "a memory," "the memory having an electrolyte," and "an organo-resistive material embedded in the electrolyte," as discussed above with respect to the rejection of claim 1.

The Office Action asserts in section 9(b), that:

Regarding claim 27, the usage of the word "memory" does not distinguish the claims from the prior art because the claim establishes that the memory has an electrolyte, an organo-resistive material embedded in the electrolyte, and a conductor embedded in the electrolyte. Since these elements are taught by Roth as shown above, the memory is present.

This is submitted to be incorrect. Since claim 27 recites "memory", and Roth-J. Vac. does not describe a memory, Roth-J. Vac. does not anticipate claim 27.

Claim 27 is the submitted to be allowable, for at least those reasons discussed above with respect to the rejection of claim 1. Withdrawal of the rejection of claim 27 is earnestly solicited.

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US Patent No. 6,447,879 to Sakurai et al.

Claims 1-6, 9-14, 25, 26, and 27 were rejected under 35 U.S.C. § 102(e) as anticipated by US Patent No. 6,447,879 to Sakurai et al. (hereinafter "Sakurai"). The rejection is traversed. Reconsideration is earnestly solicited.

Sakurai neither teaches, discloses, nor suggests "an organo-resistive material embedded in the electrolyte to form the memory unit," as recited in claim 1. Sakurai, in fact, mentions no organo-resistive material at all, let alone a memory unit, contrary to the assertions in the Office Action. Sakurai, rather, describes an organic solar cell, as described at column 17, lines 38-43:

As shown in FIG. 5, this organic solar cell has a stacked structure including a Nesa glass substrate 1, a p-type polypyrrole film 2, an Mg phthalocyanine coating layer (not shown), and an aluminum electrode 4 formed on the Mg phthalocyanine coating layer via an aqueous electrolyte solution layer 3 containing phosphate hexafluoride.

Since Sakurai describes an organic solar cell, Sakurai has no use for "an organo-resistive material embedded in the electrolyte to form the memory unit," as recited in claim 1.

In Sakurai, moreover, an aluminum electrode 4 is *formed* on the Mg phthalocyanine coating layer via an aqueous electrolyte solution, instead of an "organo-resistive material embedded in the electrolyte to form the memory unit," as recited in claim 1.

Dendritic structure 13, moreover, is a dendritic structure, not an organo-resistive material, contrary to the assertion in the Office Action. In particular, as described at column 17, lines 43-47:

The surface of the p-type polypyrrole film 2 on the side of the aqueous electrolyte solution layer has dendritic structures 13 of a few  $\mu\text{m}$  high.

Since dendritic structure 13 is a dendritic structure, Sakurai describes no "organo-resistive material embedded in the electrolyte to form the memory unit," as recited in claim 1.

Pyramidal projections 14, moreover, are pyramidal projections, not an organo-resistive material, contrary to the assertion in the Office Action. In particular, as described at column 18, lines 45-49:

The surface of the p-type polypyrrole film 2 on the side of the aqueous electrolyte solution layer has a plurality of pyramidal projections 14 of 10  $\mu\text{m}$  high having myriad micropores.

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Since pyramidal projections 14 are pyramidal projections, Sakurai describes no "organo-resistive material embedded in the electrolyte to form the memory unit," as recited in claim 1.

Claim 1 is submitted to be allowable. Withdrawal of the rejection of claim 1 is earnestly solicited.

Claims 2-6 and 9-14 depend from claim 1 and add further distinguishing elements.

Claims 2-6 and 9-14 are thus also submitted to be allowable. Withdrawal of the rejection of claims 2-6 and 9-14 is also earnestly solicited.

Claims 25 and 26:

Sakurai neither teaches, discloses, nor suggests "an organo-resistive material ohmically coupled to the electrolyte to form the memory unit," as discussed above with respect to the rejection of claim 1. Claim 25 is the submitted to be allowable, for at least those reasons discussed above with respect to the rejection of claim 1. Withdrawal of the rejection of claim 25 is earnestly solicited.

Claim 26 depends from claim 25 and adds further distinguishing elements. Claim 26 is thus also submitted to be allowable. Withdrawal of the rejection of claim 26 is earnestly solicited.

Claim 27:

Sakurai neither teaches, discloses, nor suggests "a memory," "the memory having an electrolyte," and "an organo-resistive material embedded in the electrolyte," as discussed above with respect to the rejection of claim 1.

The Office Action asserts in section 9(c), that:

Regarding claim 27, the usage of the word "memory" does not distinguish the claims from the prior art because the claim establishes that the memory has an electrolyte, an organo-resistive material embedded in the electrolyte, and a conductor embedded in the electrolyte. Since these elements are taught by Sakurai as shown above, the memory is present.

This is submitted to be incorrect. Since claim 27 recites "memory", and Sakurai does not describe a memory, Sakurai does not anticipate claim 27.

Claim 27 is the submitted to be allowable, for at least those reasons discussed above with respect to the rejection of claim 1. Withdrawal of the rejection of claim 27 is earnestly solicited.

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US Patent No. 6,958,270 to Misra et al.

Claims 1-14 and 23-27 were rejected under 35 U.S.C. § 102(e) as anticipated by US Patent No. 6,958,270 to Misra et al. (hereinafter "Misra"). The rejection is traversed. Reconsideration is earnestly solicited.

Misra neither teaches, discloses, nor suggests "an organo-resistive material embedded in the electrolyte to form the memory unit," as recited in claim 1. Misra, in fact, mentions no memory unit at all. Misra, rather, is fabricating crossbar array microelectronic electrochemical cells, and so has no use for "an organo-resistive material embedded in the electrolyte to form the memory unit," as recited in claim 1.

Misra, moreover, mentions no organo-resistive material at all, contrary to the assertion in the Office Action. Misra, rather, describes polyaniline as intrinsically *conducting*, not resistive, let alone organo-resistive. In particular, as described at column 4, lines 36, 37, and 38:

Conductive polymers are well known to those of skill in the art, for example, a commercially available intrinsically conducting polymer is Polyaniline (PAni) (ORMECON™).

Since Misra describes polyaniline as intrinsically conducting, Misra has no "organo-resistive material embedded in the electrolyte to form the memory unit," as recited in claim 1. Claim 1 is submitted to be allowable. Withdrawal of the rejection of claim 1 is earnestly solicited.

Claims 2-14 depend from claim 1 and add further distinguishing elements. Claims 2-14 are thus also submitted to be allowable. Withdrawal of the rejection of claims 2-14 is also earnestly solicited.

Claims 23 and 24:

The fourth clause of claim 23 recites:

An organo-resistive material ohmically coupled to the electrolyte to form the memory unit.

Misra neither teaches, discloses, nor suggests "an organo-resistive material ohmically coupled to the electrolyte to form the memory unit," as discussed above with respect to the rejection of claim 1. Claim 23 is the submitted to be allowable, for at least those reasons discussed above with respect to the rejection of claim 1. Withdrawal of the rejection of claim 23 is earnestly solicited.

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Claim 24 depends from claim 23 and adds further distinguishing elements. Claim 24 is thus also submitted to be allowable. Withdrawal of the rejection of claim 24 is earnestly solicited.

**Claims 25 and 26:**

Misra neither teaches, discloses, nor suggests "an organo-resistive material ohmically coupled to the electrolyte to form the memory unit," as discussed above with respect to the rejection of claim 1. Claim 25 is the submitted to be allowable, for at least those reasons discussed above with respect to the rejection of claim 1. Withdrawal of the rejection of claim 25 is earnestly solicited.

Claim 26 depends from claim 25 and adds further distinguishing elements. Claim 26 is thus also submitted to be allowable. Withdrawal of the rejection of claim 26 is earnestly solicited.

**Claim 27:**

Misra neither teaches, discloses, nor suggests "a memory," "the memory having an electrolyte," and "an organo-resistive material embedded in the electrolyte," as discussed above with respect to the rejection of claim 1.

The Office Action asserts in section 9(d), that:

Regarding claim 27, the usage of the word "memory" does not distinguish the claims from the prior art because the claim establishes that the memory has an electrolyte, an organo-resistive material embedded in the electrolyte, and a conductor embedded in the electrolyte. Since these elements are taught by Misra as shown above, the memory is present.

This is submitted to be incorrect. Since claim 27 recites "memory", and Misra does not describe a memory, Misra does not anticipate claim 27.

Claim 27 is the submitted to be allowable, for at least those reasons discussed above with respect to the rejection of claim 1. Withdrawal of the rejection of claim 27 is earnestly solicited.

**US Patent No. 4,717,673 to Wrighton '673 et al.**

Claims 1-14 and 23-27 were rejected under 35 U.S.C. § 102(b) as anticipated by US Patent No. 4,717,673 to Wrighton et al. (hereinafter "Wrighton '673"). The rejection is traversed. Reconsideration is earnestly solicited.

Wrighton '673 neither teaches, discloses, nor suggests "an organo-resistive material embedded in the electrolyte to form the memory unit," as recited in claim 1. Wrighton '673, in fact, mentions no memory unit at all. Wrighton '673, rather, describes a thiophene or a thiophene

derivative polymer-based device, and so has no use for "an organo-resistive material embedded in the electrolyte to form the memory unit," as recited in claim 1.

Wrighton '673, moreover, mentions no organo-resistive material at all, contrary to the assertion in the Office Action. Polymer 16 of Wrighton '673, rather, is a polymer, not an organo-resistive material, contrary to the assertion in the Office Action. Claim 1 is submitted to be allowable. Withdrawal of the rejection of claim 1 is earnestly solicited.

Claims 2-14 depend from claim 1 and add further distinguishing elements. Claims 2-14 are thus also submitted to be allowable. Withdrawal of the rejection of claims 2-14 is also earnestly solicited.

Claims 23 and 24:

The fourth clause of claim 23 recites:

An organo-resistive material ohmically coupled to the electrolyte to form the memory unit.

Wrighton '673 neither teaches, discloses, nor suggests "an organo-resistive material ohmically coupled to the electrolyte to form the memory unit," as discussed above with respect to the rejection of claim 1. Claim 23 is the submitted to be allowable, for at least those reasons discussed above with respect to the rejection of claim 1. Withdrawal of the rejection of claim 23 is earnestly solicited.

Claim 24 depends from claim 23 and adds further distinguishing elements. Claim 24 is thus also submitted to be allowable. Withdrawal of the rejection of claim 24 is earnestly solicited.

Claims 25 and 26:

Wrighton '673 neither teaches, discloses, nor suggests "an organo-resistive material ohmically coupled to the electrolyte to form the memory unit," as discussed above with respect to the rejection of claim 1. Claim 25 is the submitted to be allowable, for at least those reasons discussed above with respect to the rejection of claim 1. Withdrawal of the rejection of claim 25 is earnestly solicited.

Claim 26 depends from claim 25 and adds further distinguishing elements. Claim 26 is thus also submitted to be allowable. Withdrawal of the rejection of claim 26 is earnestly solicited.

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Claim 27:

Wrighton '673 neither teaches, discloses, nor suggests "a memory," "the memory having an electrolyte," and "an organo-resistive material embedded in the electrolyte," as discussed above with respect to the rejection of claim 1.

The Office Action asserts in section 9(e), that:

Regarding claim 27, the usage of the word "memory" does not distinguish the claims from the prior art because the claim establishes that the memory has an electrolyte, an organo-resistive material embedded in the electrolyte, and a conductor embedded in the electrolyte. Since these elements are taught by Wrighton '673 as shown above, the memory is present.

This is submitted to be incorrect. Since claim 27 recites "memory", and Wrighton '673 does not describe a memory, Wrighton '673 does not anticipate claim 27.

Claim 27 is the submitted to be allowable, for at least those reasons discussed above with respect to the rejection of claim 1. Withdrawal of the rejection of claim 27 is earnestly solicited.

US Patent No. 4,721,601 to Wrighton '601 et al.

Claims 1-4, 6-14 and 23-27 were rejected under 35 U.S.C. § 102(b) as anticipated by US Patent No. 4,721,601 to Wrighton et al. (hereinafter "Wrighton '601"). The rejection is traversed. Reconsideration is earnestly solicited.

Wrighton '601 neither teaches, discloses, nor suggests "an organo-resistive material embedded in the electrolyte to form the memory unit," as recited in claim 1. Wrighton '601, in fact, mentions no memory unit at all. Wrighton '601, rather, describes properties of microelectronic devices controlled by molecular level changes in electroactive polymer components, and so has no use for "an organo-resistive material embedded in the electrolyte to form the memory unit," as recited in claim 1.

Wrighton '601, moreover, mentions no organo-resistive material at all, contrary to the assertion in the Office Action. Claim 1 is submitted to be allowable. Withdrawal of the rejection of claim 1 is earnestly solicited.

Claims 2, 3, 4, and 6-14 depend from claim 1 and add further distinguishing elements. Claims 2, 3, 4, and 6-14 are thus also submitted to be allowable. Withdrawal of the rejection of claims 2, 3, 4, and 6-14 is also earnestly solicited.

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Claims 23 and 24:

The fourth clause of claim 23 recites:

An organo-resistive material ohmically coupled to the electrolyte to form the memory unit.

Wrighton '601 neither teaches, discloses, nor suggests "an organo-resistive material ohmically coupled to the electrolyte to form the memory unit," as discussed above with respect to the rejection of claim 1. Claim 23 is the submitted to be allowable, for at least those reasons discussed above with respect to the rejection of claim 1. Withdrawal of the rejection of claim 23 is earnestly solicited.

Claim 24 depends from claim 23 and adds further distinguishing elements. Claim 24 is thus also submitted to be allowable. Withdrawal of the rejection of claim 24 is earnestly solicited.

Claims 25 and 26:

Wrighton '601 neither teaches, discloses, nor suggests "an organo-resistive material ohmically coupled to the electrolyte to form the memory unit," as discussed above with respect to the rejection of claim 1. Claim 25 is the submitted to be allowable, for at least those reasons discussed above with respect to the rejection of claim 1. Withdrawal of the rejection of claim 25 is earnestly solicited.

Claim 26 depends from claim 25 and adds further distinguishing elements. Claim 26 is thus also submitted to be allowable. Withdrawal of the rejection of claim 26 is earnestly solicited.

Claim 27:

Wrighton '601 neither teaches, discloses, nor suggests "a memory," "the memory having an electrolyte," and "an organo-resistive material embedded in the electrolyte," as discussed above with respect to the rejection of claim 1.

The Office Action asserts in section 9(f), that:

Regarding claim 27, the usage of the word "memory" does not distinguish the claims from the prior art because the claim establishes that the memory has an electrolyte, an organo-resistive material embedded in the electrolyte, and a conductor embedded in the electrolyte. Since these elements are taught by Wrighton '601 as shown above, the memory is present.

This is submitted to be incorrect. Since claim 27 recites "memory", and Wrighton '601 does not describe a memory, Wrighton '601 does not anticipate claim 27.

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Claim 27 is submitted to be allowable, for at least those reasons discussed above with respect to the rejection of claim 1. Withdrawal of the rejection of claim 27 is earnestly solicited.

US Patent No. 4,945,257 to Marrocco, III et al.

Claims 1-4, 6-14 and 23-27 were rejected under 35 U.S.C. § 102(b) as anticipated by US Patent No. 4,945,257 to Marrocco, III (hereinafter "Marrocco, III"). The rejection is traversed. Reconsideration is earnestly solicited.

Marrocco, III neither teaches, discloses, nor suggests "an organo-resistive material embedded in the electrolyte to form the memory unit," as recited in claim 1. Marrocco, III, rather, describes an electrically settable resistance device, and so has no use for "an organo-resistive material embedded in the electrolyte to form the memory unit," as recited in claim 1.

Marrocco, III, moreover, mentions no organo-resistive material at all, contrary to the assertion in the Office Action. Claim 1 is submitted to be allowable. Withdrawal of the rejection of claim 1 is earnestly solicited.

Claims 2, 3, 4, and 6-14 depend from claim 1 and add further distinguishing elements. Claims 2, 3, 4, and 6-14 are thus also submitted to be allowable. Withdrawal of the rejection of claims 2, 3, 4, and 6-14 is also earnestly solicited.

Claims 23 and 24:

The fourth clause of claim 23 recites:

An organo-resistive material ohmically coupled to the electrolyte to form the memory unit.

Marrocco, III neither teaches, discloses, nor suggests "an organo-resistive material ohmically coupled to the electrolyte to form the memory unit," as discussed above with respect to the rejection of claim 1. Claim 23 is the submitted to be allowable, for at least those reasons discussed above with respect to the rejection of claim 1. Withdrawal of the rejection of claim 23 is earnestly solicited.

Claim 24 depends from claim 23 and adds further distinguishing elements. Claim 24 is thus also submitted to be allowable. Withdrawal of the rejection of claim 24 is earnestly solicited.

Claims 25 and 26:

Marrocco, III neither teaches, discloses, nor suggests "an organo-resistive material ohmically coupled to the electrolyte to form the memory unit," as discussed above with respect to

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the rejection of claim 1. Claim 25 is submitted to be allowable, for at least those reasons discussed above with respect to the rejection of claim 1. Withdrawal of the rejection of claim 25 is earnestly solicited.

Claim 26 depends from claim 25 and adds further distinguishing elements. Claim 26 is thus also submitted to be allowable. Withdrawal of the rejection of claim 26 is earnestly solicited.

Claim 27:

Marrocco, III neither teaches, discloses, nor suggests "a memory," "the memory having an electrolyte," and "an organo-resistive material embedded in the electrolyte," as discussed above with respect to the rejection of claim 1.

Claim 27 is submitted to be allowable, for at least those reasons discussed above with respect to the rejection of claim 1. Withdrawal of the rejection of claim 27 is earnestly solicited.

**Claim Rejections - 35 U.S.C. § 103:**

Claims 5, 10, 11, 14, 23, and 24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Roth-J. Vac. The rejection is traversed to the extent it would apply to the claims as amended. Reconsideration is earnestly solicited.

Claims 5, 10, 11, and 14 depend from claim 1 and add further distinguishing elements. Roth-J. Vac. neither teaches, discloses, nor suggests "an organo-resistive material embedded in the electrolyte to form the memory unit," as discussed above with respect to the rejection of claim 1. Thus, even if Roth-J. Vac were modified as proposed in the Office Action, none of claims 5, 10, 11, or 14 would result. Claims 5, 10, 11, and 14 are thus submitted to be allowable. Withdrawal of the rejection of claims 5, 10, 11, and 14 is earnestly solicited.

Claims 23 and 24:

Roth-J. Vac. neither teaches, discloses, nor suggests "an organo-resistive material ohmically coupled to the electrolyte to form the memory unit," as discussed above with respect to the rejection of claim 1. Thus, even if Roth-J. Vac. were modified as proposed in the Office Action, claim 23 would not result. Claim 23 is submitted to be allowable, for at least those reasons discussed above with respect to the rejection of claim 1. Withdrawal of the rejection of claim 23 is earnestly solicited.

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Claim 24 depends from claim 23 and adds further distinguishing elements. Claim 24 is thus also submitted to be allowable. Withdrawal of the rejection of claim 24 is earnestly solicited.

**Claims 7 and 8:**

Claims 7 and 8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Roth-J. Vac in view of US Patent No. 6,908,536 to Beckmann (hereinafter "Beckmann"). The rejection is traversed to the extent it would apply to the claims as amended. Reconsideration is earnestly solicited.

Claims 7 and 8 depend from claim 1 and add further distinguishing elements. Roth-J. Vac. neither teaches, discloses, nor suggests "an organo-resistive material embedded in the electrolyte to form the memory unit," as discussed above with respect to the rejection of claim 1. Beckman does not either. Beckman, in fact, mentions no organo-resistive material at all. Thus, even if Roth-J. Vac and Beckmann were combined as proposed in the Office Action; neither of claims 7 or 8 would result. Claims 7 and 8 are thus submitted to be allowable. Withdrawal of the rejection of claims 7 and 8 is earnestly solicited.

**Claim 27:**

The first three clauses of claim 27 recite:

A memory,  
The memory having an electrolyte;  
An organo-resistive material embedded in the electrolyte.

None of the cited references teaches, discloses, or suggests "a memory," "the memory having an electrolyte," and "an organo-resistive material embedded in the electrolyte," as recited in claim 27. Claim 27 is thus believed to be allowable.

**Conclusion:**

Accordingly, in view of the reasons given above, it is submitted that all of claims 1-14 and 23-27 are allowable over the cited references. Allowance of all claims 1-14 and 23-27 and of this entire application is therefore respectfully requested.

If there are any formal matters remaining after this response, the Examiner is invited to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge them to our Deposit Account No. 19-3935.

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Respectfully submitted,

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Date: June 16, 2011

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